

An aerial photograph of a coastal wetland. A central, winding creek flows through a landscape of green and brown marshes. Several small, circular ponds are scattered throughout the area. In the distance, a few small structures or markers are visible on the marsh. The overall scene is a complex network of water and land.

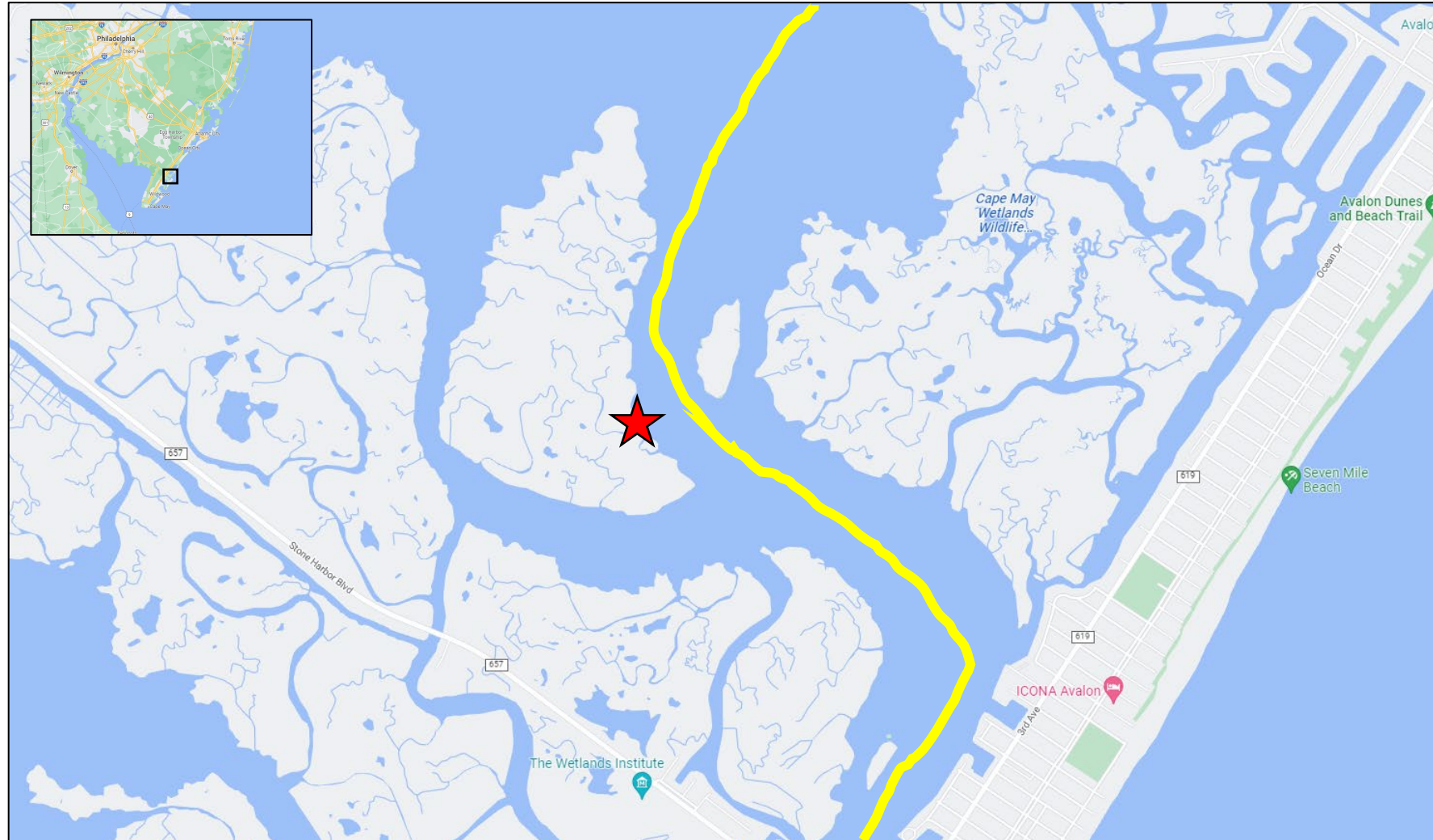
# Sediment Exchange Through Tidal Creeks

**Jarrell Smith – U.S. Army Engineer Research and Development Center,  
Coastal and Hydraulics Lab**

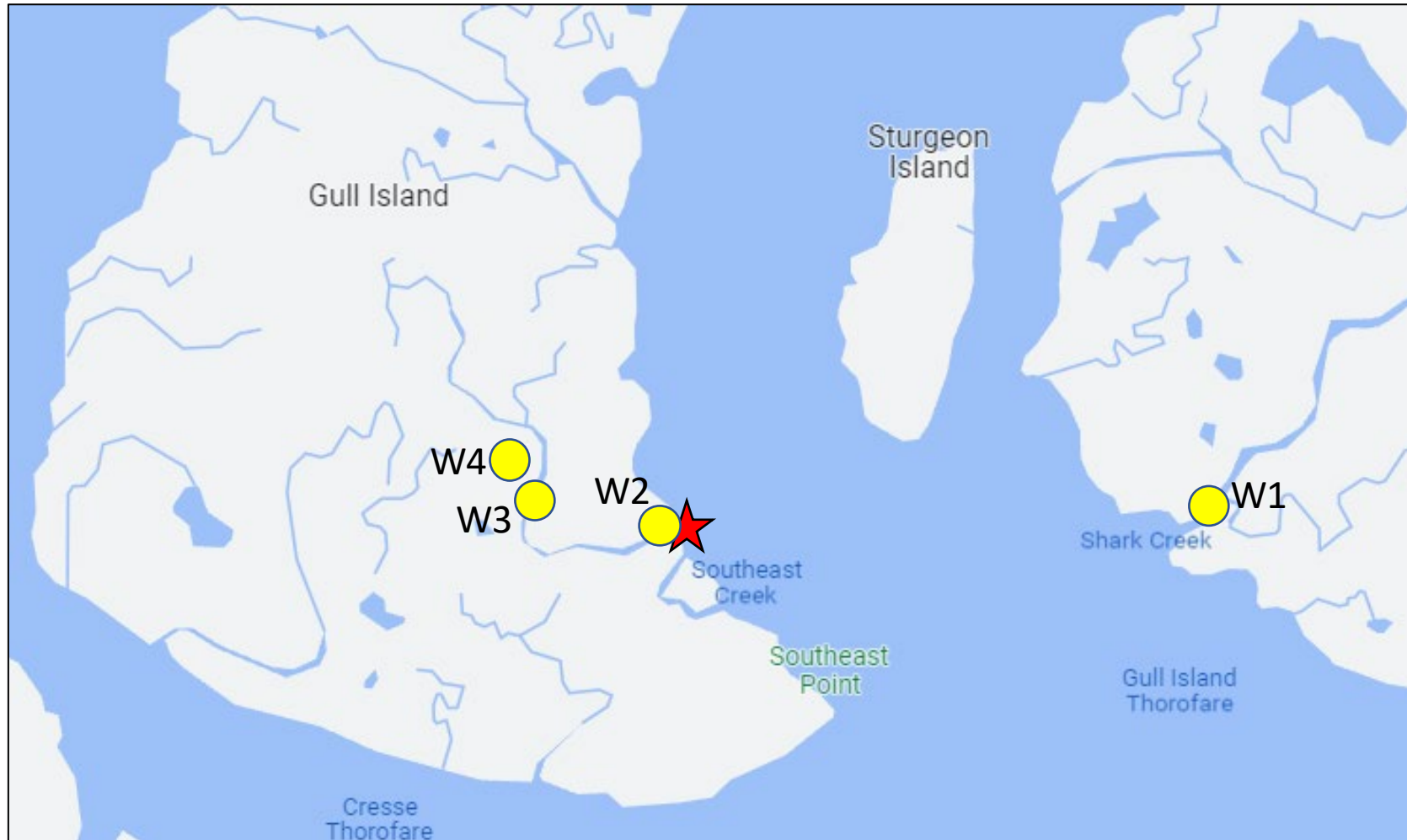
**Gregg A. Snedden – U.S. Geological Survey Wetland and Aquatic Research  
Center**

**Noah Snyder, Gail Kineke, Michael Armstrong – Boston College**

# Gull Island/Seven-Mile Island Living Lab (SMILL)



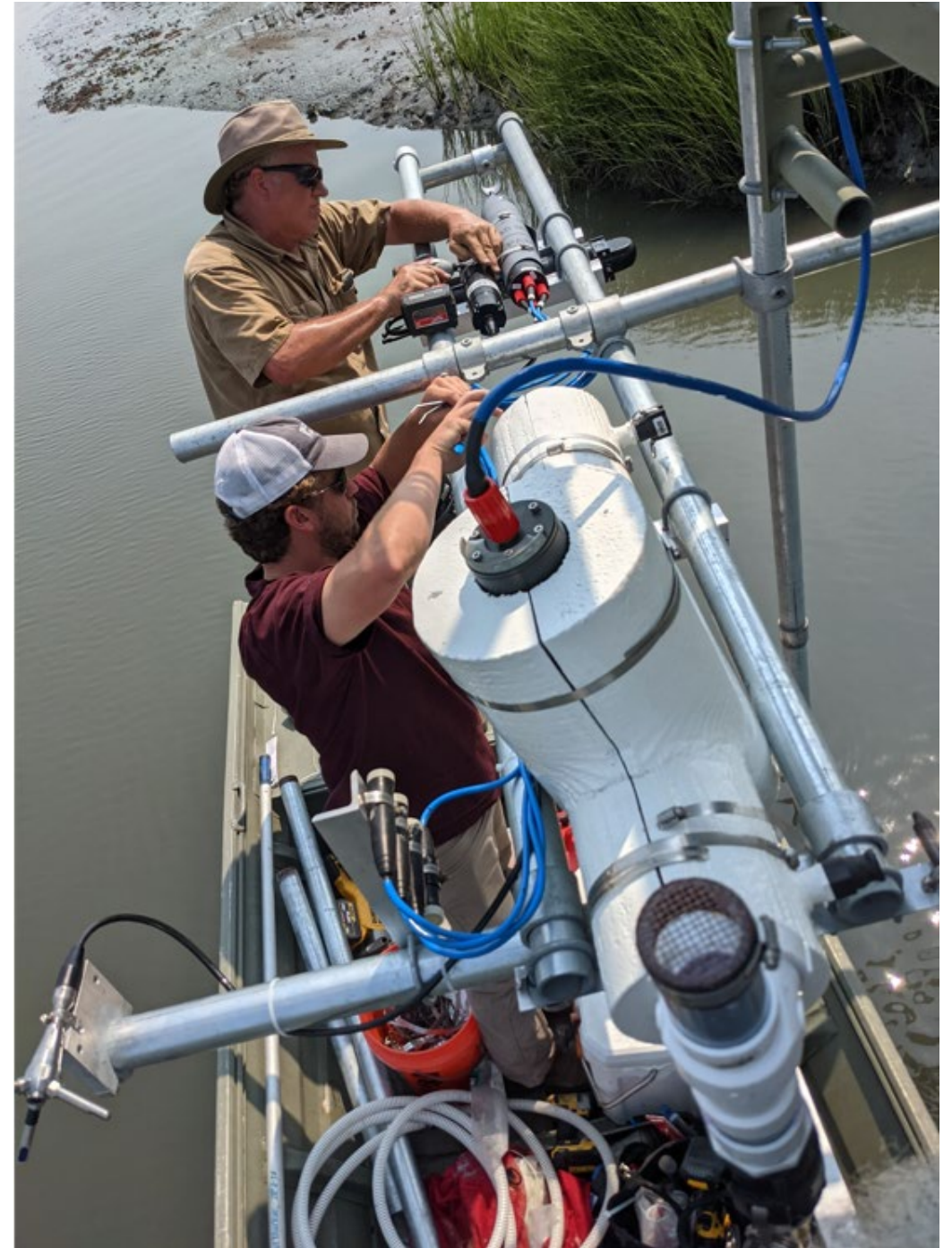
# Gull Island/Seven-Mile Island Living Lab (SMILL)



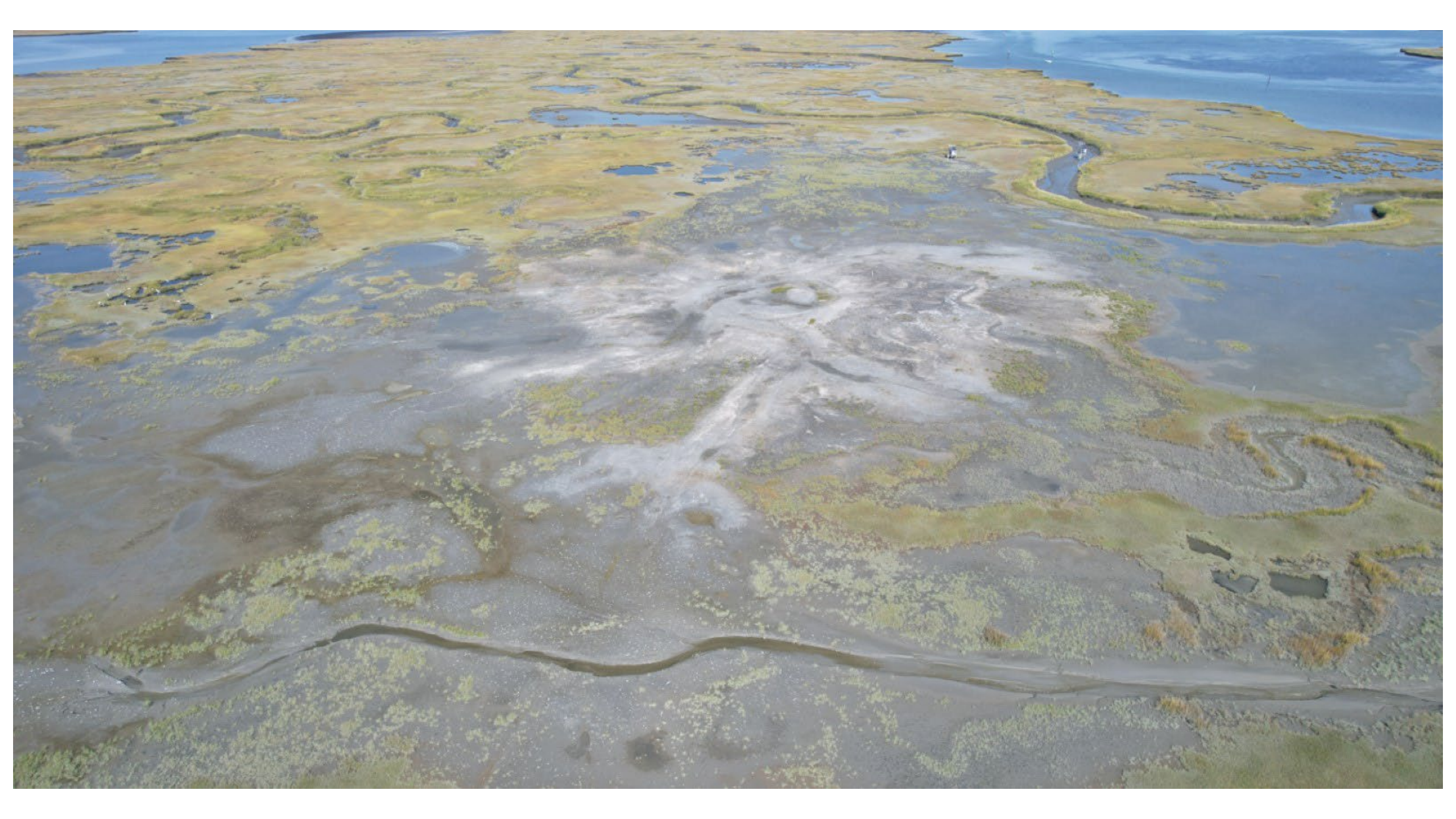
# Instrument Configuration

## Wetlands Platform 2

- Solinst Barologger
  - Atmospheric Pressure
- Solinst LevelLogger4 LTC (CTD)
  - Hydrostatic pressure
  - Temperature
  - Conductivity
- Nortek Vector (ADV)
  - Velocity
  - Turbulence
  - Bed Elevation (range)
- Aquascat (ABS) [Boston College]
  - Multi-frequency acoustic backscatter
  - 1 MHz down
  - 1, 2.5, 5 MHz up
- PICS (flowthrough)
  - Particle size, settling velocity
- Sequoia LISST-200x (flowthrough)
  - Particle size, optical obscuration
- YSI ISCO pump sampler
  - Physical sample daily







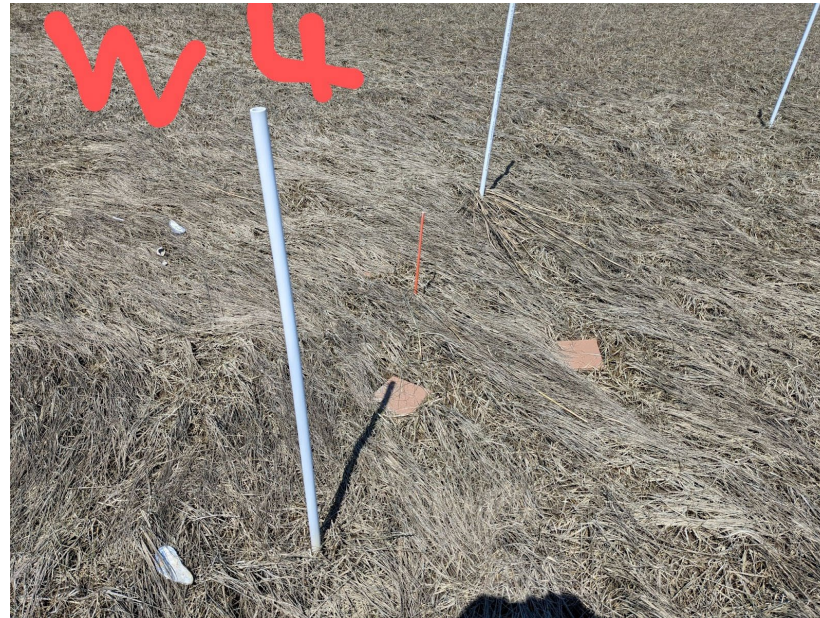
# Sediment Accretion Plots



| STA | Elevation [ft MLLW] |
|-----|---------------------|
| T1  | 4.23                |
| T2  | 4.68                |
| T3  | 4.68                |



Installed:  
Tiles: 14-Sep-2021  
Feldspar: 09-Dec-2021



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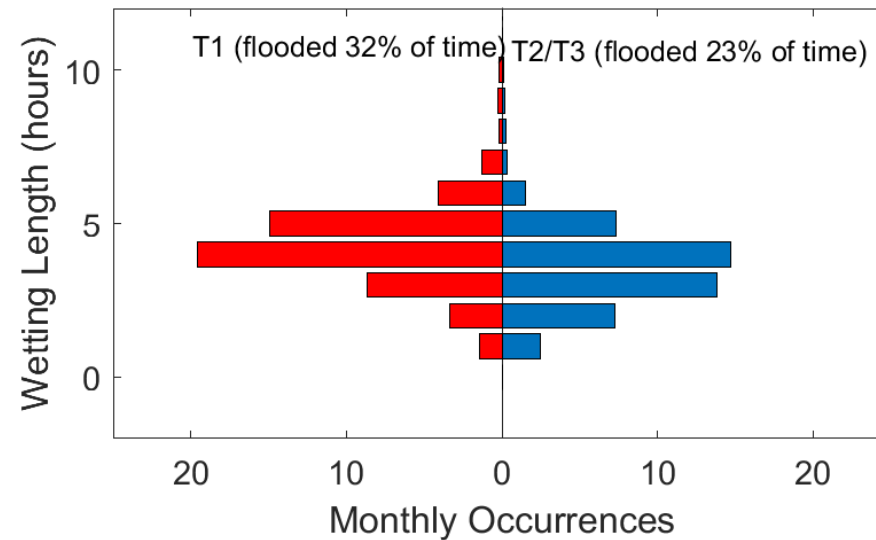
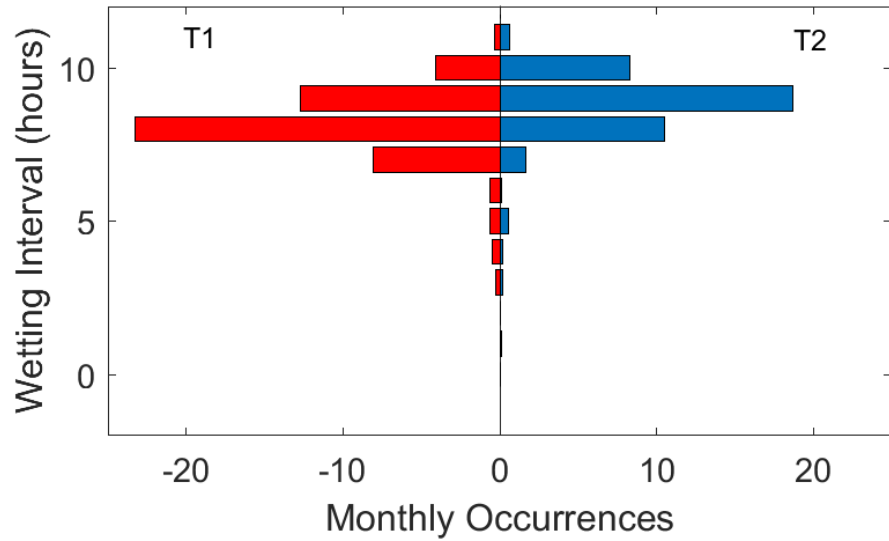
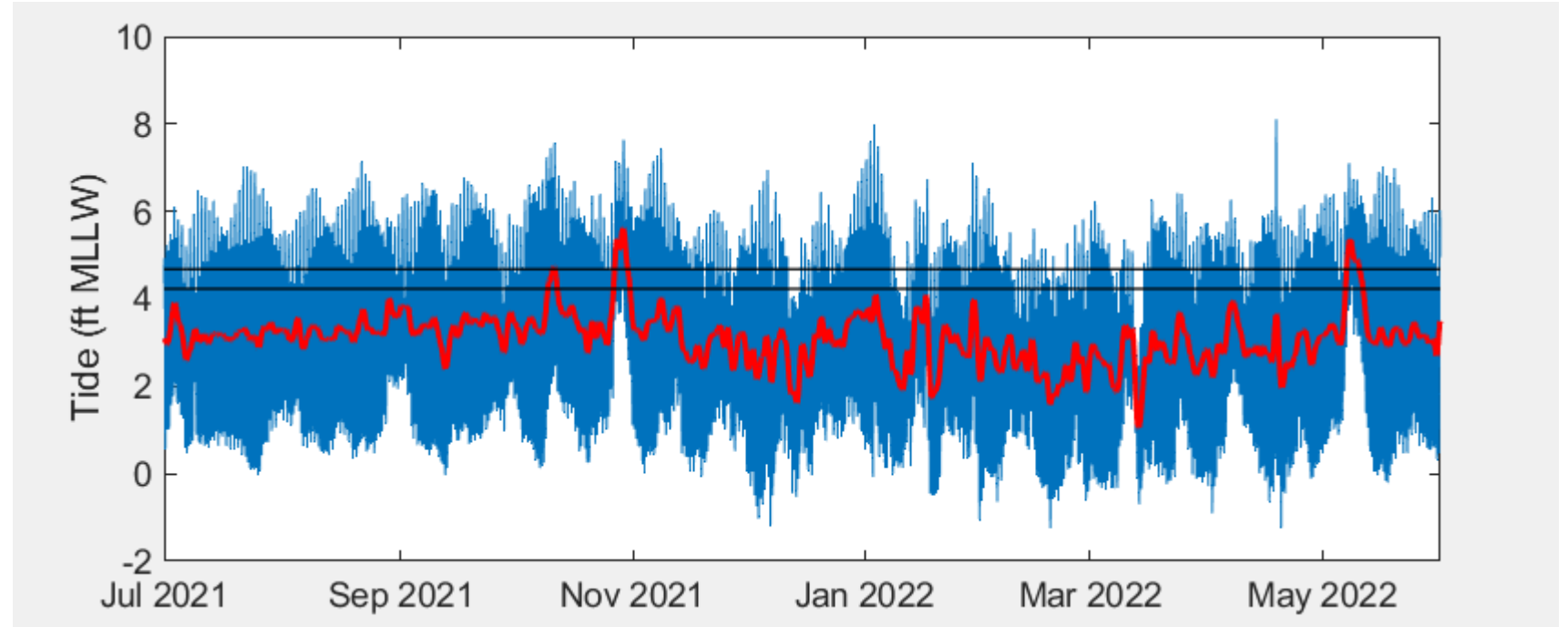
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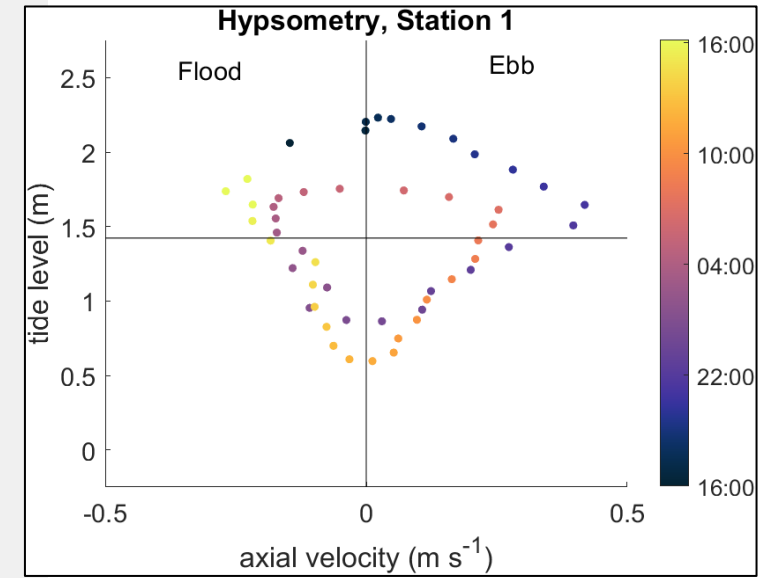
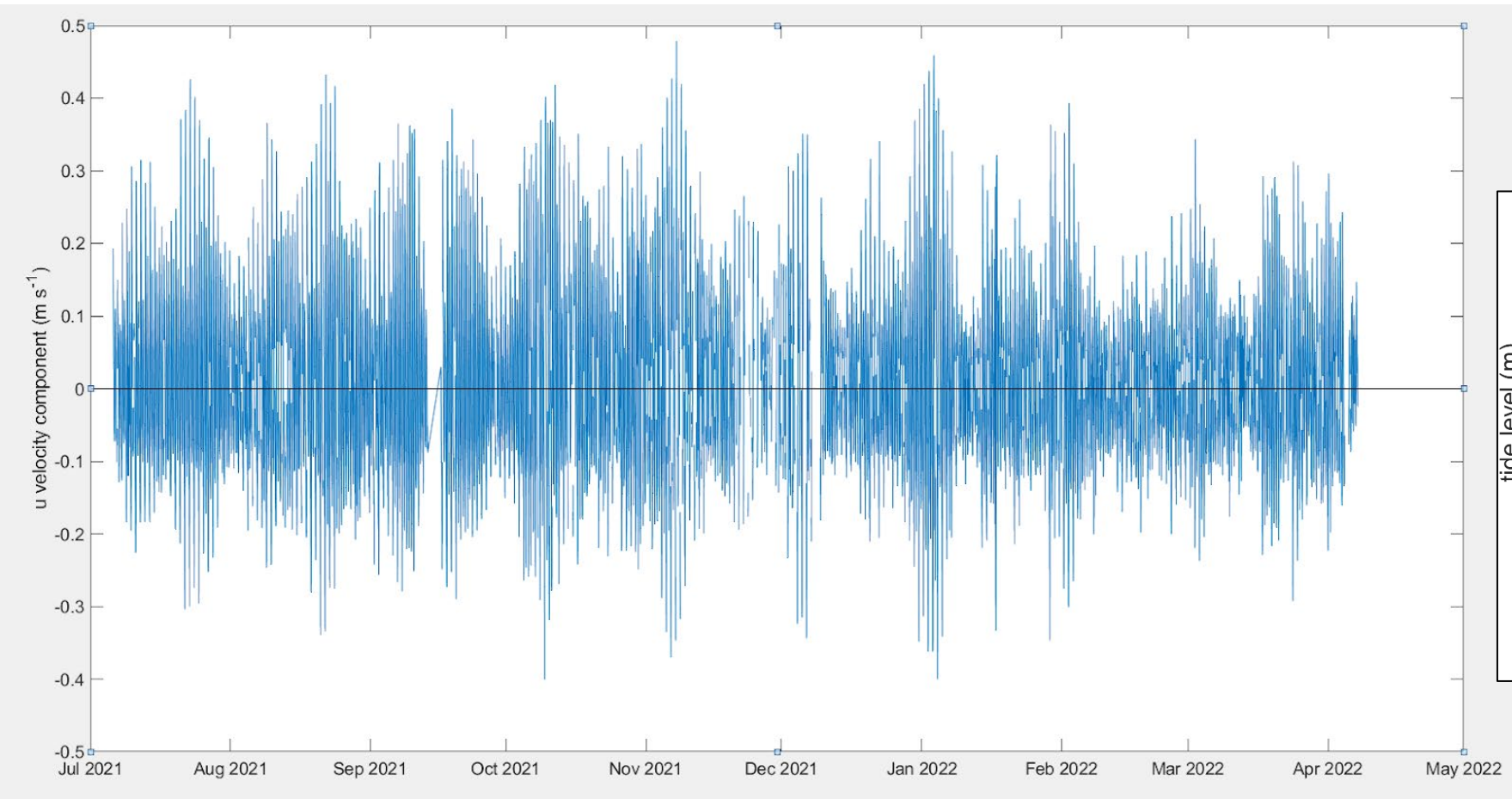


# Sediment Accretion Plots – Inundation Metrics

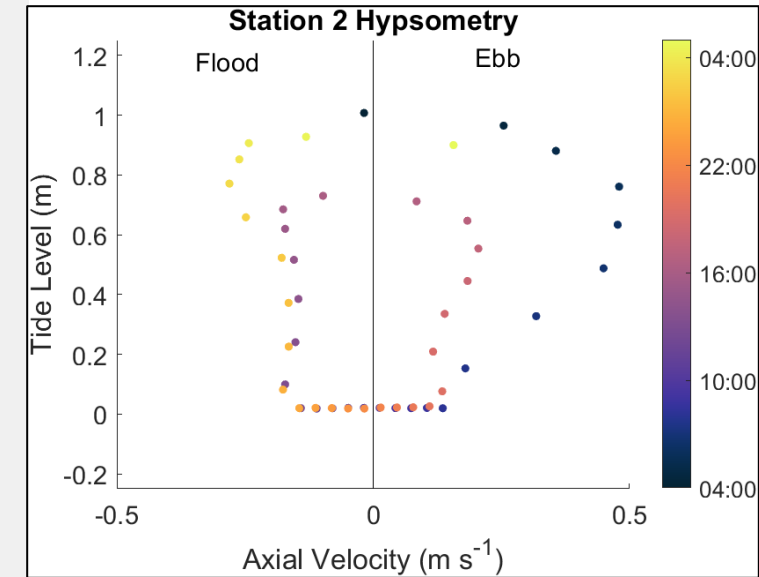
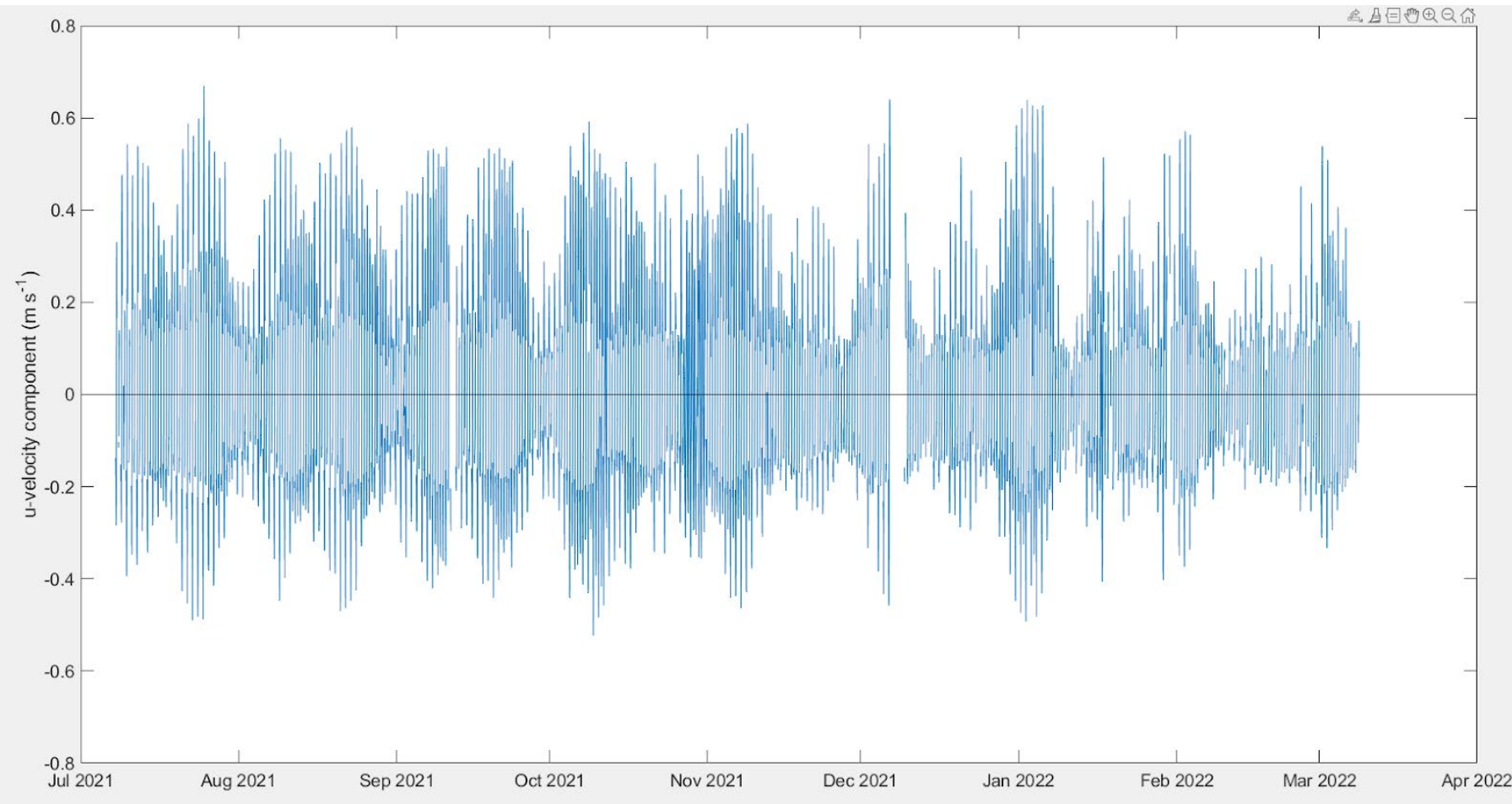
| STA | Elevation [ft MLLW] |
|-----|---------------------|
| T1  | 4.23                |
| T2  | 4.68                |
| T3  | 4.68                |



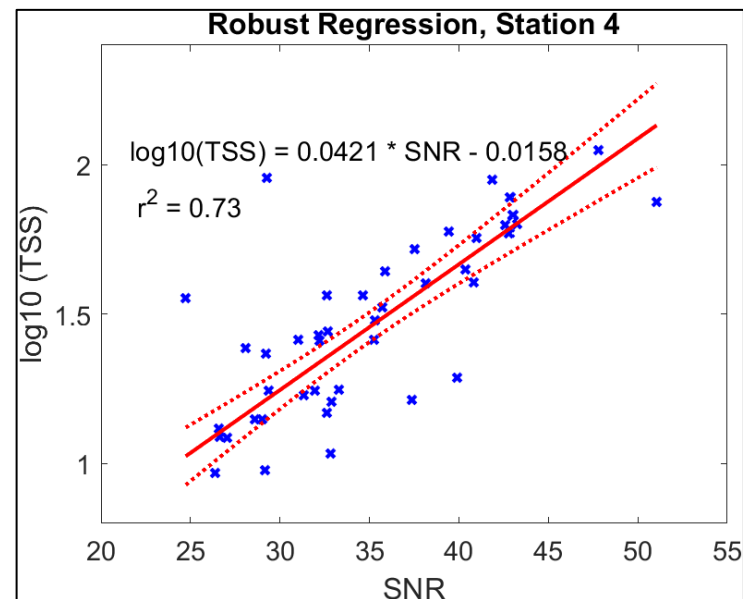
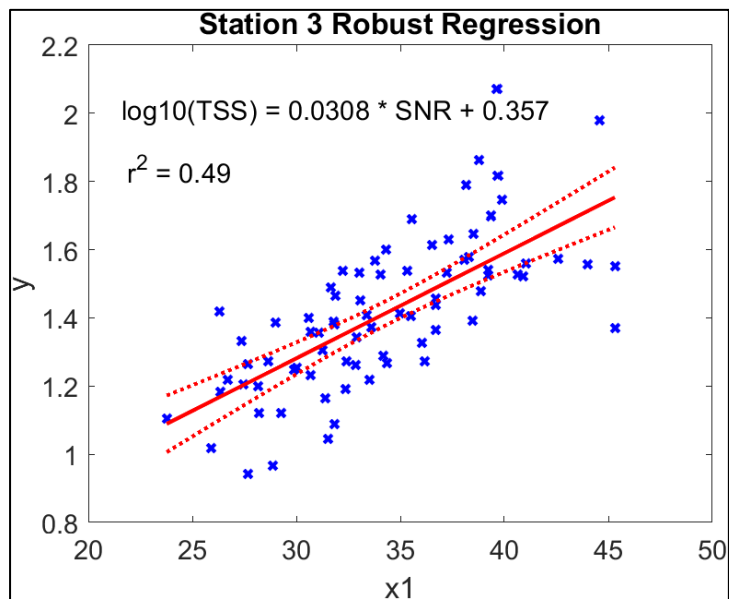
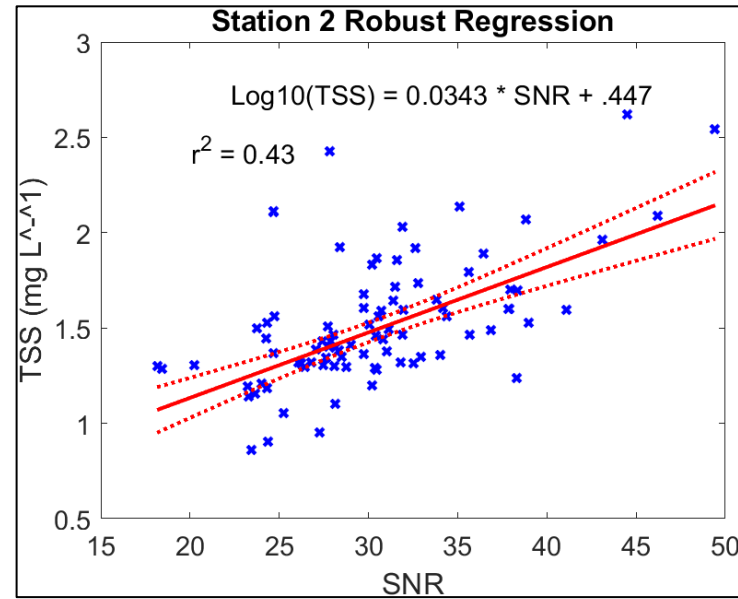
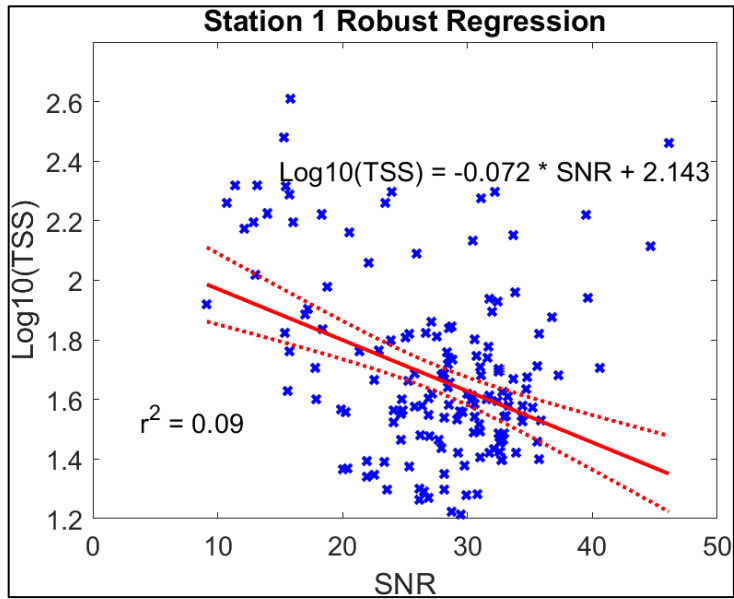
# Velocity Time Series – Station 1



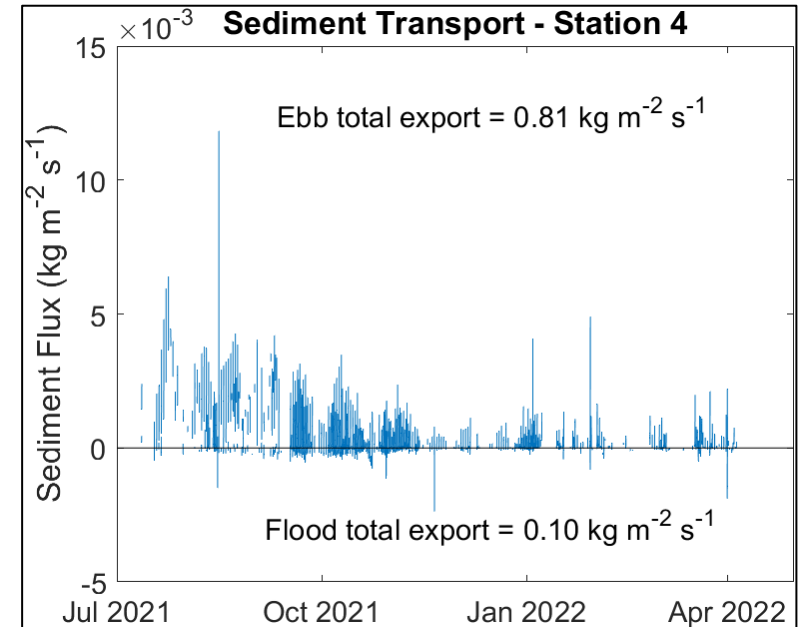
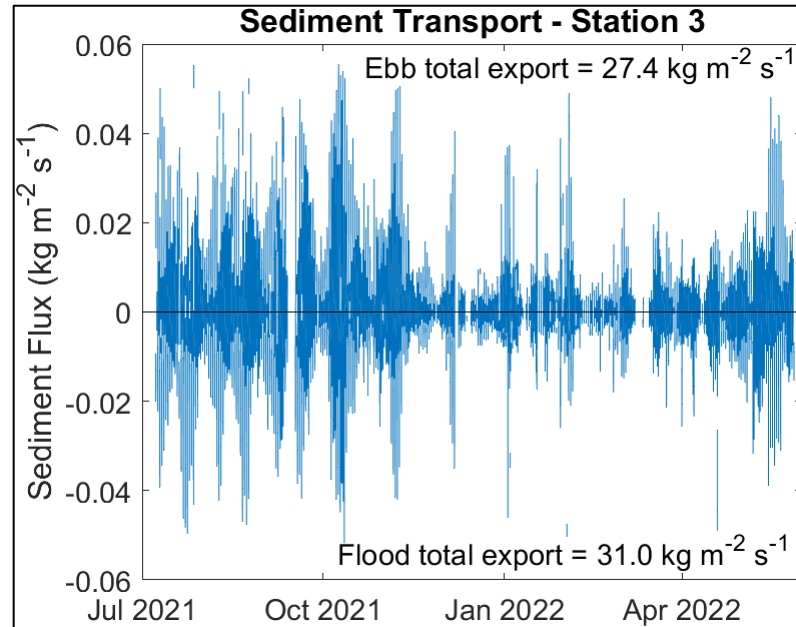
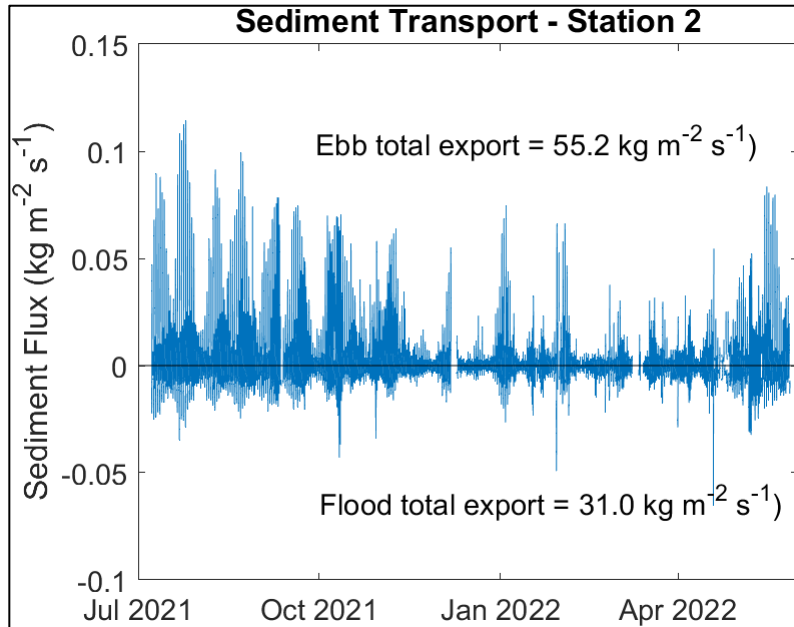
# Velocity Time Series – Station 2



# Acoustic Backscatter / SSC Calibration



# Sediment Transport



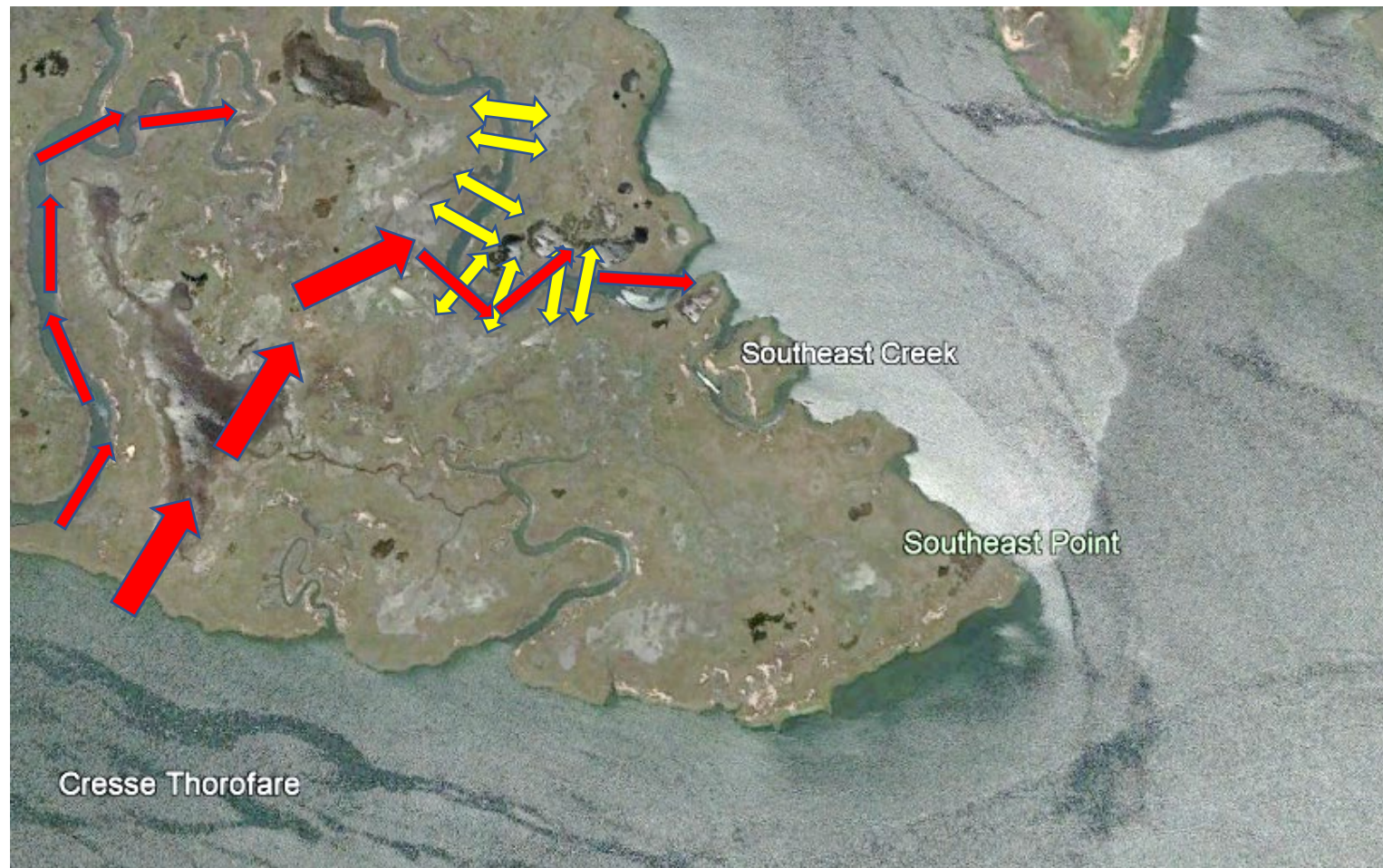
# Southeast Creek is a Sediment Exporter?

- Considerations
  - Perhaps velocities are ebb-biased because of positioning of small ADV sampling volume relative to tidal channel bathymetry



# Southeast Creek is a Sediment Exporter?

- Considerations
  - Single point of ingress/egress over tidal cycle, or flow-through?



Thank You!

